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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,332

01/19/2006

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72093

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23872 7590 04/01/2009  
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EXAMINER

NGUYEN, HUNG D

ART UNIT

PAPER NUMBER

4118

MAIL DATE

DELIVERY MODE

04/01/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,332	<b>Applicant(s)</b> RIPPL, PETER	
	<b>Examiner</b> HUNG NGUYEN	<b>Art Unit</b> 4118	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/28/06, 1/19/06</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show “an intersection (18)” as described in the specification (Par. 69 and 70). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-13 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. In claim 1, there is insufficient antecedent basis for "the laser tool" in line 3 and "the machining operation" recited in line 8. The phrase "can emit" recites in line 3 should be changed to "emits" for positive recitation. The phrase "superimposing an at least partially oppositely" recites in line 7 is vague and can not be clearly understood. It appears that there is a missing text between "an" and "at least". Moreover, it is unclear to what extends the phrase "partially oppositely" would be understood.

5. Claim 4 recites the limitation "the velocity of displacement  $V_r$ " in line 2. There is insufficient antecedent basis for this limitation in the claim. It is suggested to amend to --a velocity of displacement  $V_r$  -- or define a velocity of displacement  $V_r$  earlier in the claim.

6. Claim 5 recites the limitation "the machine velocity  $V_s$ " in line 2. There is insufficient antecedent basis for this limitation in the claim. It is suggested to amend to --a machine velocity  $V_s$  -- or define a machine velocity  $V_s$  earlier in the claim.

***Claim Rejections - 35 USC § 102***

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-3, 6-16, 20-23 are rejected under 35 U.S.C. 102(a) as being anticipated by Torii et al. (US Pat. 5,132,887).
8. Regarding claim 1, Torii et al. discloses a process for machining workpieces with a moving laser beam, the process comprising: holding the laser tool that can emit a laser by a multiaxial mechanical manipulator at a manipulator hand at a spaced location above the workpiece moving the laser beam along a predetermined path during a displacing motion and superimposing an at least partially oppositely directed compensating motion of the laser beam to the displacing motion during the machining operation (Col. 2 , Line 54-Col. 3, Line 30).
9. Regarding claim 2, Torii et al. discloses a process wherein the workpiece is machined intermittently, while machining phases and transport phases alternate , wherein the point at which the laser beam reaches the surface gets ahead of the laser tool (Col.2, Lines 1-5 states that the laser head must be kept at a constant distance from the surface of a workpiece, therefore as the arm 18 Fig. 2 moves up by the “U” axis with respect to the workpiece, the robot wrist 20 Fig. 2 must move forward “Z” axis to keep the constant distance from the workpiece; as the laser head pointed upwardly to the workpiece, the laser beam reaches to the surface ahead of the laser head).
10. Regarding claim 6, Torii et al. discloses the compensation motion of the laser beam is an angular motion 18 (Fig. 2 moves with “U” axis).

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11. Regarding claim 7, Torii et al. discloses the compensating motion of the laser beam is performed by a pivoting motion of the manipulator hand about one of its hand axis 18 (Fig. 2).

12. Regarding claims 8 and 16, Torii et al. discloses the laser tool 22 (Fig. 2) is mounted on the manipulator hand 18a (Fig. 2) by means of an extension arm that creates a distance.

13. Regarding claims 9 and 20, Torii et al. discloses the laser tool has a mobile, controllable scanning means 24 (Fig. 2) (Col. 4, Lines 30-36).

14. Regarding claim 10, Torii et al. discloses the laser beam is directed toward the workpiece at the beginning of machining with an obliquely forwardly directed beam angle  $\alpha$ ,  $\alpha'$  (Arm 18 Fig. 2 swings up about "U" axis", with an angle and start the welding downwardly back to the horizontal position).

15. Regarding claim 11, Torii et al. discloses the laser beam is directed toward the workpiece at the beginning of machining with an obliquely rearwardly directed beam angle  $\beta$ ,  $\beta'$  (Arm 18 Fig. 2 swings down about "U" axis", with an angle and start the welding upwardly back to the horizontal position).

16. Regarding claim 12, Torii et al. discloses the manipulator performs an essentially constant displacing motion during the machining; 16 (Fig. 2) needs to move for welding one spot to another (Col. 3, Line 61-63).

17. Regarding claim 13, Torii et al. discloses the manipulator performs an essentially constant displacing motion during the transport phases between the machinings; arm 16 (Fig. 2) needs to move for welding one spot to another.

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18. Regarding claim 14, Torii et al. discloses a device for machining the workpieces a moving laser beam, the device comprising: a laser tool 22 (Fig. 2) held by a multiaxial mechanical manipulator 14, 16, 18, 18a (Fig. 2) at a manipulator hand 20 (Fig. 2), the laser tool being movable along a preset path during a displacing motion (par. 4, Lines 30-36), the manipulator having a means for generating a compensating motion of the laser beam, which said motion takes place during the machining operation and is directed opposite and is superimposed to the displacing motion (Col. 7, Lines 6-10).

19. Regarding claim 15, Torii et al. discloses the manipulator has a multiaxial manipulator hand 14, 16, 18, 18a (Fig. 2), in which at least one hand axis 14 and/or 16 (Fig. 2) can be controlled independently from the displacing motion.

20. Regarding claim 21, Torii et al. discloses the manipulator is designed as a, at least six-axis articulated-arm robot, " $\theta$ ", "W", "U", " $\gamma$ ", " $\beta$ ", "Z" (Fig. 2) .

21. Regarding claim 22, Torii et al. discloses the laser tool is designed as a welding tool (Col. 1, Line 6-10).

22. Regarding claim 3 and 23, Torii et al. discloses at least partially transversely directed compensating motion of the laser beam is superimposed to the displacing motion during the machining operation. (Arm 18 Fig. 2 movement, same as compensating motion, is superimposed to the arm 16 Fig. 2 movement, same as displacement motion, to do the seam welding).

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al. (US Pat. 5,132,887) in view of et al. (US Pat. 6,127,647).

25. Torii et al. discloses all the claimed features as set forth above except the velocity of the displacement  $V_r$  is greater than the oppositely directed compensating velocity  $V_w$  in the manner recited in claim 4 and the velocity of the displacement  $V_r$  is greater than the machining velocity  $V_s$  of the laser beam at the workpiece in the manner recited in claim 5. Matsuo et al. teaches method of an apparatus for welding workpiece with laser beam where the laser head mounted on the distal end of a robot arm in which the velocity of the displacement is greater than the oppositely directed compensating velocity and the velocity of the displacement is greater than the machining velocity of the laser beam at the workpiece as the laser beam applying head is position close to the region of the workpiece to be welded, it is difficult to move the laser head at a high speed (Col. 1, Lines 15-24) (Robot movement speed vs. Arm rotation movement for detail welding). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Torii et al., the velocity of the displacement  $V_r$  is greater than the oppositely directed compensating velocity  $V_w$  and the velocity of the displacement  $V_r$  is greater than the machining velocity  $V_s$  of



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the laser beam at the workpiece, as taught by Matsuo et al. in order to have the velocity of the displacement  $V_r$  is greater than the oppositely directed compensating velocity and the displacement  $V_r$  is greater than the machining velocity  $V_s$ , for the purpose of welding a workpiece efficiently and smoothly.

26. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al. (US Pat. 5,132,887) in view of Ito et al. (US Pat. 4,567,347).

27. Regarding claim 17, Torii et al. discloses all the claimed features except for the laser tool has a focusing optical system for generating a fixed-angle laser beam in the manner recited in claim 17. Ito et al. teaches a measurement head for welding machine which the laser beam 25 (Fig. 4) emitted from the light-emitting unit 22 (Fig. 4) onto a workpiece 24 (Fig. 4) with a fixed angle (Col. 7, Lines 13-16). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Torii et al. the teaching of Ito et al. in order to have an optical system for generating a fixed-angle beam, for the purpose of welding a workpiece at a narrow space.

28. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al. (US Pat. 5,132,887) in view of Sumi (US Pat. 5,610,758).

29. Regarding claim 18, Torii et al. discloses all the claimed features except for the laser tool has a fixed focal distance in the manner recited in claim 18. Sumi teaches optical system and light beam scanning apparatus with fixed focal length (Col. 16-17, Lines 65-67 and Lines 1-5). It would have been obvious to one of ordinary skill in the

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art at the time of the invention was made to utilize in Torii et al. the teaching of Sumi in order to have fixed focal length, for the purpose of focusing on the fixed range.

30. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al. (US Pat. 5,132,887) in view of Bandelin et al. (US Pat. 5,948,287).

31. Regarding claim 19, Torii et al. discloses all the claimed features except for the laser tool has a focal distance of approx. 150 mm to 400 mm in the manner recited in claim 19. Bandelin et al. teaches the focal distance from 150 to 200 mm (Col. 3, Lines 9-12). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Torii et al. the teaching of Bandelin et al. in order to have a focal distance from 150 mm or higher, for the purpose of focusing over a large area.

### ***Conclusion***

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Torii et al. (US Pat. 5,140,129) discloses multi-articulated arm type industrial laser robot. Plankenhorn (US Pat. 4,539,462) discloses the robotic laser beam delivery apparatus. McGee et al. (US Pat. 6,070,109) discloses the robot calibration system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG NGUYEN whose telephone number is (571)270-7828. The examiner can normally be reached on Monday-Friday, 7:30AM-5PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUNG NGUYEN/

Examiner, Art Unit 4118

/TU B HOANG/

Supervisory Patent Examiner, Art Unit 3742